UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

ENVIRONMENTAL SERVICES DIVISION
ATHENS, GEORGIA 30613

Site: Carver
Break: 3 4
Other:

MEMORANDUM

DATE: JUN 11 1991

SUBJECT: Colliersville Site, Colliersville, TN

FROM: Alan G. Auwarter, Chief
Toxics Evaluation Section
Ecological Support Branch
Environmental Services Division

TO: Beth Brown
Remedial Project Manager
Kentucky / Tennessee Section
North Superfund Remedial Branch
Waste Management Division

We have finalized the draft study plan for the subject site as per conversations with Mark Wilson during our conference call yesterday morning.

I feel the accompanying plan will answer questions that remain pertaining to the current condition of Nonconnah Creek. The Ecology Branch will be happy to work with you as you finalize plans for whatever investigations may be required for this site.

Enclosed also are photographs from our reconnaissance in February, that show the condition of the creek and many of the proposed sample stations.

Call if I can provide further assistance or if you have questions pertaining to the enclosed materials.

STUDY PLAN: ENVIRONMENTAL ASSESSMENT COLLIERVILLE SITE
COLLIERVILLE, TENNESSEE

INTRODUCTION:

Distinct differences were found in biological community structure on Nonconnah Creek during the Remedial Investigation of the Collierville Site (Draft Remedial Investigation, 1990). Without supporting studies, it is impossible to delineate if the effects noted were attributable to the site or to other considerations such as habitat quality. The need to separate the impact (if any) from possible contaminants that may be emanating from the site and side effects caused by contributions from other sources has necessitated further study. The information gained in this study will be used to delineate if previously noted effects are indeed site related.

SCOPE:

This study will be conducted to determine the extent (if any) of environmental contamination that can be attributed to the Collierville site and to separate impacts (if any) of Carrier from other (non site related) impacts. The study will include:

- Flow measurements on Nonconnah Creek (Figure 1, Stations 2 and 5), ditches draining Carrier (Stations 7 and 9), and the ditch upstream of the plant (Station 6) at both high and low flows.

- Habitat assessments (EPA/44/4-89-01, Chapter 5) of eleven sample stations listed below.

- Water Quality measurements at stations 1-10 at both low flow and after a rain event. Station 10 is the only station (1-10) at which unconsolidated sediments are available for collection. It is immediately adjacent to the Colliersville site (Carrier property), may drain the property and, to our knowlege, has never been sampled. A backgroung sediment station (Station 11) will be identified for comparison with station 10. The water quality measurements will consist of analysis for volatiles, nutrients and metals. Sediments from stations 10 and 11 will be analyzed for volatiles, metals, particle size and organic weight. In addition, 24 hour temperature, conductivity, D.O. and pH at both high and low flow should be made on Nonconnah Creek both above and below discharges from the site (Stations 2 and 5). Water temperature, conductivity and pH will also be taken at the time of sampling for all water samples.

- Biological toxicity tests with Ceriodaphnia dubia, Selenastrum capricornutum, Lemna gibba, Microtox® and Pimephales promelas will be conducted on water samples from sample stations 1-10 shown on Figure 1. S. capricornutum algal growth tests will be conducted to assess potential nutrient loading of the waters

at these ten stations. These tests will also be conducted using water collected during both high and low flow conditions for stations with sufficient water for sampling. In addition, toxicity tests utilizing Hyalella azteca and Lumbriculus varigatus will be conducted on sediment from stations 10 and 11.

- Sample stations: Ten sample stations (Fig. 1) will be utilized during this study for water quality and toxicity testing.

    1. Background station (Nonconnah Creek above town or other suitable stream)
    2. Nonconnah Creek upstream of rip-rap above Byhalia Rd.
    3. Nonconnah Creek downstream of rip-rap Byhalia Rd.
    4. Nonconnah Creek upstream of West Ditch
    5. Nonconnah Creek downstream of West Ditch
    6. East Ditch above Byhalia Rd. (east of road)
    7. East Ditch below confluence of parking lot ditch
    8. West Ditch above drainage south of plant
    9. West Ditch below drainage south of plant
    10. Drainage to South Ditch at pool below culvert
    11. Background for station 10 sediment, to be identified.

DISCUSSION

The depauperate biological community that now exists in Nonconnah Creek and its tributaries (ditches) is a product of one or more contributing factors:

1. severe hydraulic flushing of the system following rain events;
2. little available habitat for the establishment of biota;
3. the toxic effect of chemicals that may have entered or may continue to enter ditches and Nonconnah Creek from the Colliersville site; and
4. the stimulatory effect of nutrients and the toxic effect of other chemicals that may enter Nonconnah Creek upstream of the Colliersville site and from the industrial park across Byhalia Rd. from the Colliersville site through the East Ditch.

Each element of the proposed study addresses one or more of these potential contributing factors to define the effect of each and to serve as an information base from which remedial measures, if warranted, can be designed. All samples and testing will be done according to EPA standard operating procedures. Proper chain-of-custody procedures will be employed.

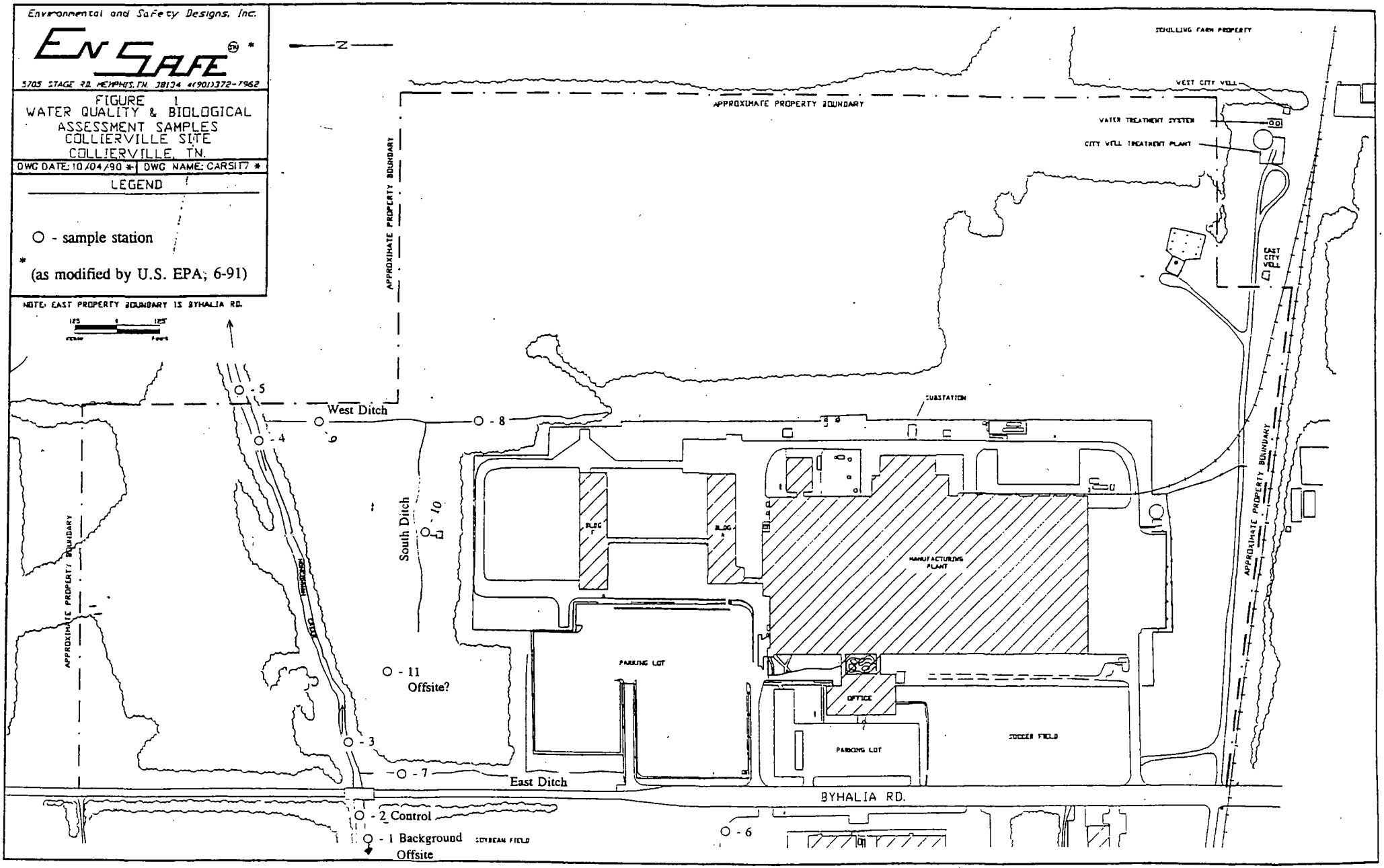
Environmental and Safety Designs, Inc.
EnSafe
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FIGURE 1
WATER QUALITY & BIOLOGICAL ASSESSMENT SAMPLES
COLLIERVILLE SITE
COLLIERVILLE, TN.
DWG DATE: 10/04/90 * | DWG NAME: CARSIT7 *
LEGEND
O - sample station
* (as modified by U.S. EPA; 6-91)
NOTE: EAST PROPERTY BOUNDARY IS BYHALIA RD.
125 0 125
Feet
APPROXIMATE PROPERTY BOUNDARY
SCHILLING FARM PROPERTY
WEST CITY WELL
WATER TREATMENT SYSTEM
CITY WELL TREATMENT PLANT
SUBSTATION
West Ditch
South Ditch
East Ditch
O - 1 Background
Offsite
O - 2 Control
O - 3
O - 4
O - 5
O - 6
O - 7
O - 8
O - 10
O - 11
Offsite?
BLDG F
BLDG A
MANUFACTURING PLANT
PARKING LOT
OFFICE
SOCCER FIELD
PARKING LOT
SOYBEAN FIELD
BYHALIA RD.